Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A <u>method for a</u> code division multiple access ~~user equipment, the user equipment configured to receive a plurality of K data signals over a shared spectrum, the~~ user equipment comprising:

~~means for~~ transmitting spread spectrum communication signals over the shared spectrum;

~~means for~~ receiving and sampling a combined signal having the K transmitted data signals over the shared spectrum;

~~means for~~ producing a combined channel response matrix using codes and impulse responses of the K data signals;

~~means for~~ determining a block column of a cross correlation matrix using the combined channel response matrix, each block entry of the block column being a K by K matrix;

~~means for~~ taking a Fourier transform of a complex conjugate transpose of the combined channel response matrix multiplied to the combined signal samples;

~~means for~~ multiplying an inverse of a Fourier transform of each block entry to a result of the Fourier transform to produce a Fourier transform of the data vector; and

~~means for~~ taking an inverse Fourier transform of the data vector Fourier transform to produce data of the K data signals.

2. (Currently Amended) The ~~method for a~~ user equipment of claim 1 wherein the ~~means for~~ taking a Fourier transform is ~~configured to take the Fourier transform~~ by multiplying the conjugate transpose of the combined channel response matrix to the combined signal samples and ~~to take~~ taking the Fourier transform of a result of the conjugate transpose multiplication.

3. (Currently Amended) The ~~method for a~~ user equipment of claim 1 including ~~means for~~ using a Colicky decomposition of the block entries of the diagonal matrix to determine the data.

4. (Currently Amended) The ~~method for a~~ user equipment of claim 1 including ~~means for~~ determining the data over a data field time period of a time division duplex communication burst where the combined signal samples extend beyond the data field time period.

5. (Currently Amended) The ~~method for a~~ user equipment of claim 4 wherein the ~~means for~~ determining the data uses extended samples of the combined signal samples extends beyond the data field time period for a length of an estimated impulse response.

6. (Currently Amended) The ~~method for a~~ user equipment of claim 4 wherein the ~~means for~~ determining the data uses combined signal samples that extend beyond the data field time period so that a length of the combined signals is a length compatible with a prime factor algorithm fast Fourier transform.

7.   (Previously Presented) A code division multiple access user equipment, the user equipment configured to receive a plurality of K data signals over a shared spectrum, the user equipment comprising:

a transmitter configured to transmit spread spectrum communication signals over the shared spectrum;

an antenna configured to receive a combined signal having the K transmitted data signals over the shared spectrum;

a sampling device configured to sample the combined signal;

a channel estimator configured to estimate impulse responses of the K data signals; and

a data detection device configured to produce a combined channel response matrix using codes and the impulse responses of the K data signals; to determine a block column of a cross correlation matrix using the combined channel response matrix, each block entry of the block column being a K by K matrix; to take a Fourier transform of a complex conjugate transpose of the combined channel response matrix multiplied to the combined signal samples; to multiply an inverse of a Fourier transform of each block entry to a result of the Fourier transform to produce a Fourier transform of a data vector; and to take an inverse Fourier transform of the data vector Fourier transform to produce data of the K data signals.

8.   (Previously Presented) The user equipment of claim 7 wherein the data detection device is configured to take the Fourier transform is by multiplying the conjugate transpose of the combined channel response matrix to the combined signal samples and to take the Fourier transform of a result of the conjugate transpose multiplication.

9.   (Previously Presented) The user equipment of claim 7 wherein the data detection device is configured to use a Colicky decomposition of the block entries of the diagonal matrix to determine the data.

10.   (Previously Presented) The user equipment of claim 7 wherein the data detection device is configured to determine the data over a data field time period of a time division duplex communication burst where the combined signal samples extend beyond the data field time period.

11.   (Previously Presented) The user equipment of claim 10 wherein the data detection device is configured to use extended samples of the combined signal samples that extend beyond the data field time period for a length of an estimated impulse response.

12.   (Previously Presented) The user equipment of claim 10 wherein the data detection device is configured to use combined signal samples that extend beyond the data field time period so that a length of the combined signals is a length compatible with a prime factor algorithm fast Fourier transform.